

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
2 June 2005 (02.06.2005)

PCT

(10) International Publication Number  
**WO 2005/050720 A1**

(51) International Patent Classification<sup>7</sup>: H01L 21/027, G02B 26/00, G03F 7/20

(21) International Application Number:  
PCT/SB2004/001701

(22) International Filing Date:  
19 November 2004 (19.11.2004)

(25) Filing Language:  
English

(26) Publication Language:  
English

(30) Priority Data:  
60/524,076 20 November 2003 (20.11.2003) US

(71) Applicant (for all designated States except US): MICRONIC LASER SYSTEMS AB [SE/SE]; IPR & Legal Dep, Nytorpsvägen 9, S-183 03 Täby (SE).

(72) Inventor; and

(75) Inventor/Applicant (for US only): SANDSTRÖM, Torbjörn [SE/SE]; Banvägen 56, S-435 43 Pixbo (SE).

(74) Agent: NORDKVIST, Johan; Micronic Laser Systems AB, IPR & Legal Dep, Nytorpsvägen 9, S-183 03 Täby (SE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:  
— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

WO 2005/050720 A1

(54) Title: METHOD AND APPARATUS FOR PRINTING PATTERNS WITH IMPROVED CD UNIFORMITY

(57) Abstract: An aspect of the present invention includes a method to pattern a workpiece with improved CD uniformity using a partially coherent electromagnetic radiation source. Said method including the actions of: determining, for a plurality of layers in said workpiece, CD uniformity as a function of a number of exposure flashes, determining, for the plurality of layers in said workpiece, the cost of patterning as a function of the number of exposure flashes, and selecting the number of exposure flashes on a layer by layer basis, which gives a predetermined CD uniformity corresponding to a preferred cost. Other aspects of the present invention are reflected in the detailed description, figures and claims.

BEST AVAILABLE COPY